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Verbal irony as implicit display of ironic environment: Distinguishing ironic utterances from nonirony☆

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Abstract

This paper proposes an implicit display theory of verbal irony in order to provide a plausible explanation of how irony is distinguished from nonirony. The implicit display theory claims that verbal irony is an utterance or a statement that implicitly displays ironic environment, a proper situational setting in the discourse context, and that verbal irony is a prototype-based category. The notion of implicit display provides typicality conditions characterizing the prototype of verbal irony; the similarity between the prototype and an utterance is formulated as the degree of ironicalness. In order for an utterance to be interpreted ironically, the utterance must be recognized as achieving implicit display through the process of assessing the degree of ironicalness, and the discourse situation must be identified as ironic environment through the process of checking or inferring its constituent events/states. If these two criteria are satisfied, the utterance is judged to be ironic, otherwise it is judged to be nonironic. This paper also argues that the implicit display theory overcomes several difficulties of the existing irony studies and that it is consistent with the empirical findings from psycholinguistics. These arguments indicate that the implicit display theory is a more adequate and comprehensive theory of verbal irony than the traditional pragmatic theory, the echoic interpretation theory, the pretense theory, and other theories.

Keywords: Verbal irony; Ironic environment; Nonliteral language; Prototype; Implicit display theory; Psychology of irony

1. Introduction

Verbal irony is an intelligent, witty figure of speech found in many language activities. It has attracted the interest of linguists, philosophers, psychologists,

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rhetoricians and other scholars. Researchers in linguistics (e.g., Grice, 1975; Haverkate, 1990; Giora, 1995) have paid much attention to the relation (e.g., opposition, insincerity, negation) between the surface meanings of ironic utterances and their intended meanings, while psychological or cognitive studies (e.g., Sperber and Wilson, 1981; Clark and Gerrig, 1984; Kreuz and Glucksberg, 1989; Wilson and Sperber, 1992; Gibbs, 1994; Kumon-Nakamura et al., 1995) have been devoted to the properties of irony (e.g., echoic mention/interpretation, pretense, ironic tone of voice) which facilitate ironic interpretation.

However, it appears to me that none of the previous irony theories can distinguish ironic utterances from nonironic ones completely, i.e., they do not provide a sufficient explanation of how people judge whether an utterance is ironic or not. The reason for this incompetence lies in the implicit nature of verbal irony. Verbal irony is fundamentally implicit, not explicitly expressed. As Haverkate (1990: 79) pointed out, verbal irony cannot be expressed by referential expressions like 'I ironically inform you that ...' or 'It is ironic that ...', and it may be empirically inferred from the fact that there does not exist a verb like 'ironize'.[1] The implicit nature of irony causes serious difficulty in drawing a clear boundary between irony and nonirony, in spite of a number of previous attempts to define irony by common properties shared by all ironic utterances: "irony possesses no easily identifiable independent criteria. As much as we would like to find them, there are no signals that can be considered purely signals of irony" (Barbe, 1995: 71).

This paper proposes an *implicit display theory* of verbal irony which provides a more plausible explanation of how irony is distinguished from nonirony. The main claim underlying the theory is threefold. First, ironic language presupposes an *ironic environment*, a certain situational setting in the discourse context. Verbal irony is a language-related phenomenon, but it cannot be discussed outside of a situation. Although the importance of situation in verbal irony has been pointed out by some notable studies (Littman and Mey, 1991; Gibbs and O'Brien, 1991; Gibbs et al., 1995), these studies make a fatal mistake in that they confuse situations which cause verbal irony (i.e., situations which make statements ironic) with ironic situations or situational irony (Lucariello, 1994) (i.e., situations which are ironic). I argue that though closely related, these two kinds of situation represent different concepts and should be addressed separately. Because this paper focuses on verbal irony, I define ironic environment as a situational setting which motivates verbal irony.

Second, verbal irony is viewed as an utterance/statement that *implicitly displays* ironic environment. It means that ironic communication presumes an implicit display of ironic environment, and because of this presumption, people understand an ironic intention that is not explicitly expressed. Implicit display provides neither a necessary nor a sufficient condition for distinguishing verbal irony from nonirony. Rather,

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[1] Of course, we can give explicit expressions like the following utterance to convey ironic intention to hearers with little common ground or to avoid the risk of misinterpretation: "I am going to be ironic now: I just love people who have all the money for warfare but none for welfare" (Barbe, 1995: 140). However, such irony loses its effectiveness and it is pragmatically unwellformed.

it is a presumption according to which people judge whether an utterance is ironic, and infer an ironic intention so that the current situation meets the requirements of an ironic environment.

Third, verbal irony is a prototype-based category characterized by the notion of implicit display. Implicit displays are achieved by certain linguistic properties, but to different degrees and irony does not always have all the properties for implicit display. Thus, the notion of implicit display provides typicality conditions characterizing the prototype 'verbal irony', and as prototype theory (e.g., Rosch and Mervis, 1975; Lakoff, 1987) predicts, utterances with more properties of implicit display are perceived as being more ironic. It follows that people judge whether an utterance is ironic by assessing the similarity between the prototype and the utterance.

The rest of this paper is organized as follows: section 2 discusses the existing irony theories that have so far been proposed, and shows that they are too specific to cover all ironic utterances and, at the same time, too general to exclude all nonironic utterances. Section 3 then elaborates on the implicit display theory of verbal irony and explains how it distinguishes irony from nonirony. Sections 4–6 lend support to the implicit display theory by showing that it can cope with several problems posed by the previous irony theories and account for the empirical findings from psycholinguistics.

2. Criticism of previous approaches to irony

2.1. Violation-based approach

According to the traditional pragmatic view of irony (Grice, 1975; Searle, 1979b; Haverkate, 1990), people detect ironic meanings by becoming aware of an apparent violation of the maxim of quality (Grice, 1975) or felicity conditions for surface speech acts (Searle, 1979b; Haverkate, 1990); as a result, they substitute the surface-literal meaning with its opposite meaning. This view explains some typical ironies like the following utterance (1a):

[Situation 1] A mother asked her son to clean up his messy room, but he was lost in a comic book. After a while, she discovered that his room was still messy, and said to her son:

(1) a. This room is totally clean!

The mother's utterance (1a) violates the maxim of quality in that it obviously contradicts the situation and she does not believe what is literally said.

However, the violation-based view fails to cover many ironic utterances: hearers understand ironic intention even when an utterance does not include such a violation or when they are not aware of such a violation. For example, irony can be communicated by various expressions that do not include the violation, such as a literally true assertion (1b) and an understatement (1c) uttered in the same situation as Situation 1.

(1) b. I love children who keep their rooms clean.
c. This room seems to be messy.

Likewise, in the following example Peter is unaware of the events of Brenda's morning and thus he cannot decide whether her utterance (2) includes a violation or not. Nevertheless, he can appreciate that her utterance is ironic, especially when it is accompanied by prosodic cues (Barbe, 1995; Milosky and Ford, 1997).

[Situation 2] Peter sees his friend Brenda at work for the first time that day, and she says:
(2) I've had a great morning!

These examples indicate that violation is not a necessary property of irony.

Moreover, violation is not a sufficient property, either. The violation-based view cannot discriminate irony from other nonliteral utterances (e.g., metaphors, indirect speech acts) which include the violation. In addition, the claim that irony conveys the opposite of the literal meaning is problematic: irony is far more than mere opposition. For example, the ironic utterance (1b) cannot be seen as communicating the opposite of what is literally said, such as 'I hate children who keep their rooms clean' or 'I love children who do not keep their rooms clean'.

2.2. *Mention-based approach*

The mention theory proposed by Sperber and Wilson (1981) denied the traditional approach and focused on the allusive nature of irony. The recent version of the mention theory, the echoic interpretation theory (Sperber and Wilson, 1986, 1998; Wilson and Sperber, 1992), has argued that verbal irony is a variety of echoic interpretations of someone's thought, utterance, expectation, or cultural norm, in which the speaker dissociates herself from the echoed materials with accompanying ridicule or scorn. For example, Peter's reply (3a) of the following exchange is a typical example of echoic irony.

[Situation 3] Jesse said 'I'd be promoted before you' to his colleague Peter. This elicited the following reply:
(3) a. Oh! You'd be promoted before me.

However, the echoic interpretation theory is still incomplete as a comprehensive framework for irony. One problem is that Sperber and Wilson's notions of echoic interpretation and of dissociation from an echoed material are too narrow, and therefore unable to explain all cases of irony. In other words, the echoic interpretation theory cannot explain that irony need not necessarily be interpretively echoic, as shown by, e.g., Giora (1995) and Kumon-Nakamura et al. (1995). For example, the utterance (1b) 'I love childrenwho keep their rooms clean' is ironic, but we cannot easily find the echoed material from which the mother dissociates herself.[2] A more convincing example is the following where, given the situation that makes the echo (3a) of Jesse's preceding utterance ironic, the following nonechoic utterance (3b) also communicates irony.

(3) b. Thank you for informing me of your priceless opinion.

According to Wilson and Sperber (1992), an utterance is an echoic interpretation of, or interpretively resembles, another thought or utterance to the extent that these two propositions share logical and contextual implications. Hence, the reply (3b) cannot be analyzed as an interpretive echo, because it hardly shares any implications with Jesse's preceding utterance, nor does it share them with general norms/universal desire.

Another problem that makes the echoic interpretation theory incomplete is that it provides no plausible explanation of how irony is distinguished from interpretive echoes used for nonironic purposes. For instance, the utterance (4b) in the following exchange is echoic (i.e., it mentions the Prime Minister's utterance and simultaneously expresses Mira's negative attitude), but it is not ironic (Giora, 1995: 248).

(4) a. Dina: I missed the last news broadcast. What did the Prime Minister say about the Palestinians?
b. Mira (with ridiculing aversion): That we should deport them.

Other mention-based approaches have recently been proposed which extend the mention theory to cover a wider range of verbal irony. Kreuz and Glucksberg's (1989) echoic reminder theory emphasized the reminder function of ironic utterances: verbal irony reminds addressees of what have been expected by alluding to that expectation. Their theory implies that not all ironic utterances are echoic, and because of this it may be a more adequate theory than the mention theory. However, it suffers from the same difficulties because the authors' notion of reminder reveals no more features of verbal irony than does the mention theory. Kumon-Nakamura et al.'s (1995) allusional pretense theory integrated both the mention-based and the violation-based approaches, and claimed that all ironic utterances allude to a failed expectation and violate one of the felicity conditions for well-formed speech acts. The allusional pretense theory has a powerful ability to explain more ironic utterances than both other approaches, resolving some of their difficulties. However, it still suffers from similar problems. First, the allusional pretense theory, just like the violation-based approach, cannot explain the fact that hearers interpret ironic

[2] Sperber and Wilson (1998) argue that (1b) ironically echoes the higher-order explicature that the utterance is relevant in the circumstances, e.g., that the room is clean and the mother praises her child sincerely. However, such an explanation would lead the echoic interpretation theory astray. If the explanation by the higher-order explicature is right, many other cases of irony like (1a) for which they provide different explanations (e.g., echo of someone's utterance, expectation, or general norms) can also be explained along the same line (e.g., 1a can also be seen as an echo of the same higher-order explicature). Hence, they must explain why they do not apply the echo of the higher-order explicature to such cases of irony.

utterances without recognizing their violations. Second, their notion of allusion is not clear enough to distinguish between irony and nonirony. Third, it does not address the role of ironic cues in interpreting irony (Glucksberg, 1995).

2.3. Pretense-based approach

In an attempt to criticize the mention theory, Clark and Gerrig (1984) proposed a seemingly different approach, the pretense theory of irony. The pretense theory views an ironist as "pretending to be an injudicious person speaking to an uninitiated audience" (Clark and Gerrig, 1984: 121). For example, the ironist of Situation 1, the mother, pretends to be an imaginary person, perhaps an indulgent mother who never reprimands her children, by exaggerating how ridiculous her behavior is. When addressees recognize this pretense, they understand that the speaker is expressing the intended derogatory attitude ironically.

However, pretense is not a necessary property of irony. If one says 'What lovely weather!' when the weather is miserable, the pretense theory explains, the speaker is pretending to be an unseeing person, like a TV forecaster, exclaiming to some uncomprehending audience how beautiful the weather is. However, do hearers really identify such persons in interpreting irony? What is worse, the authors' argument about the victim of irony makes the pretense theory less convincing. The pretense theory posits two kinds of victims – the person the speaker pretends to be and the ignorant audience accepting what is said –, but it is more likely to say that the utterance above has no victims (Sperber, 1984). Furthermore, in the case of Situation 1, the victim is obviously the mother's son, but it seems unreasonable to suppose that she pretends to be her son or that he is an ignorant acceptor of what is said. These facts reveal that the claim that the ironist is pretending to be an imaginary person is very doubtful, and thus, irony need not necessarily include pretense.

Pretense is not a sufficient property of irony, either. One typical example of nonirony with pretense is parody: "What they offer as a theory of irony is a straightforward theory of parody" (Sperber, 1984: 135). Moreover, as Kreuz and Glucksberg (1989) pointed out, the notion of pretense is too powerful for an adequate theory of irony in that it applies to all indirect speech acts.

The recent version of the pretense theory by Clark (1996) argues that irony is viewed as joint pretense. The joint pretense view assumes an imaginary situation, rather than an imaginary person, in which the speaker of irony is performing a serious communicative act directed at the addressee. Irony is caused by their joint pretense in the actual situation that the event in the imaginary situation is taking place. Hence, on this view, the mother and her son in Situation 1 jointly pretend that she praises him for his clean room.

However, the joint pretense view still fails to distinguish irony from nonirony. First, the joint pretense view poses a different serious problem: it assumes that the addressee of irony must share the ironic intention with the speaker beforehand in order to pretend jointly; however, in many cases (such as Situation 1) this is an inappropriate assumption. Hence, joint pretense is not a necessary property of irony. Second, the theory cannot distinguish irony from parody and other nonironic utterances for the same reason as in the case of the original pretense theory, and thus joint pretense is not a sufficient property. Finally, Clark (1996) states nothing about how joint pretense treats the victims of irony (although the joint pretense view seems to explain victimless irony, such as the 'weather' irony, since it does not assume that an ironist pretends to be an imaginary person).

3. Implicit display theory

This section presents an implicit display theory of irony which overcomes the problems of the previous approaches. To begin with, section 3.1 introduces the ironic environment as a prerequisite for the speaker to be ironic, while section 3.2 describes how ironic utterances achieve an implicit display of the ironic environment by linguistic and paralinguistic means. Section 3.3 then explains why the prototype-based view of irony is required, by showing that implicit display need not be recognized completely in interpreting ironic utterances; it illustrates how the prototype-based view is incorporated into the implicit display theory by giving a formula for calculating the degree of ironicalness as a similarity measure. Finally, section 3.4 describes how the implicit display theory distinguishes irony from nonirony.

3.1. Ironic environment

Given two temporal locations t_0 and t_1 that temporally precede the time when an utterance (or a statement) is given, ironic environment consists of the following three events/states.

1. The speaker has a certain expectation E at time t_0.
2. The speaker's expectation E fails (i.e., E is incongruous with reality) at time t_1.
3. The speaker has a negative emotional attitude (e.g., disappointment, anger, reproach, envy) toward the incongruity between what is expected and what actually is the case.[3]

When the discourse context includes these three events/states, I say that the situation is surrounded by an ironic environment. In order for an utterance/statement to be ironic, the speaker must deliver it in the situation surrounded by the ironic environment.[4] For example, Situation 1 is surrounded by an ironic environment since the ironist, the mother, has an expectation that her son's room is clean (this is implied by

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[3] All examples of ironic environment include the speaker's negative attitude (or some kind of criticism in terms of Barbe, 1995), but there are negative attitudes of different degrees and types. Some are strong, and others are weak; some are serious but others are joking.

[4] As I mentioned in the introduction, ironic environment differs from both ironic situation and situational irony. The example of Situation 1 serves to recognize the difference: outside Situation 1, the utterances (1a)–(1c) cannot have ironic meanings, but Situation 1 is not at all ironic. It is very unlikely for someone to say 'It's ironic that a mother discovered that her son did not clean up his room in spite of her advice'.

her action of asking him to clean the room), but her expectation has not been fulfilled and it can be reasonably assumed that she is disappointed or angry at the result that the room is still messy.

Hence, when a discourse context is not surrounded by ironic environment, such that a speaker is not given the reason for being ironic, none of the utterances given in that context have an ironic intention.[5] For example, in the following situation, the mother's utterances (5a)–(5c) are not ironic though they are the same expressions as (1a)–(1c).

[Situation 4] A mother asked her son to clean up his messy room, which he then did completely. After a while, she discovered that his room was clean, and said to her son:

(5) a. This room is totally clean!
b. I love children who keep their rooms clean.
c. This room seems to be messy.

The utterances (5a) and (5b) are literal complimentary statements and (5c) is a literal complaint with no ironic/sarcastic intention. Situations like Situation 4 can be readily recognized not to be surrounded by ironic environment, because it is quite obvious to hearers that the speaker's expectation is fulfilled, and that the speaker believes that. On the other hand, in many situations which are surrounded by ironic environment such as Situation 1, all three components of the ironic environment are easily recognized by hearers.

The speaker's expectation deserves special mention. The important point to note is that, on my view, the speaker of an ironic statement must have a failed expectation for his/her utterance to be ironic. In other words, all expectations which motivate irony must be attributed to or possessed by the speaker. For example, in the case of Situation 3, unless the speaker Peter expects addressee Jesse to know that his opinion expressed in the preceding utterance is false, utterance (3a) should not communicate irony, even though it echoes Jesse's preceding utterance with a negative attitude. This point essentially differentiates the implicit display theory from the mention-based approach, as will be discussed further in section 4.2.

3.2. Implicit display

The main claim of the implicit display theory is that verbal irony implicitly displays the fact that the situation is surrounded by ironic environment. Implicit display of the three components of the ironic environment is typically accomplished in such a way that an utterance U

1. alludes to the speaker's expectation E,

[5] It must be noted here that by this phrase, I mean that the possibility that a discourse context is surrounded by ironic environment is denied. Therefore, it does not rule out the cases (e.g., Situation 2) in which hearers are not sure whether the situation is surrounded by ironic environment or not.

2. includes pragmatic insincerity by intentionally violating one of the pragmatic principles, and
3. expresses indirectly the speaker's negative attitude toward the failure of E.

The term 'display' was first used in the context of irony research by Williams (1984: 128): "What the ironist does, then, is to *display* the situation to the listener". However, the notion of display in the present paper essentially differs from hers and is better for at least two reasons. First, Williams' notion of situation includes only two components – i.e., incongruity of two or more elements and a person who does not see the incongruity –, which is not enough to explain verbal irony, and at the same time she confuses the ironic situation with the situation which triggers verbal irony. Second, she does not explain how irony displays the situation.

According to the notion of implicit display, utterances are clearly nonironic when they *directly* express at least one of the three components of ironic environment. Thus, the following utterances are not perceived as ironic even if they are spoken in Situation 1, which is surrounded by ironic environment.

(1) d. I've expected a clean room.
  e. I'm disappointed with the messy room.

Neither utterance implicitly displays an ironic environment: (1d) directly expresses the speaker's expectation, while (1e) directly expresses the speaker's true attitude.

In sections 3.2.1–3.2.3, I describe in detail the notions of allusion, pragmatic insincerity, and indirect expression of negative attitudes.

3.2.1. Allusion

The notion of allusion in this paper can be captured in terms of coherence relations – e.g., *volitional-cause*, *non-volitional-cause*, *enable*, *prevent* – similar to the relations of rhetorical structure theory (Mann and Thompson, 1987). Given the propositional content P of an utterance U, P's constituents P_i (I assume $P = P_0$) and the speaker's expected event/state Q, the utterance U *alludes* to the speaker's expectation E if and only if

1. there is a path that coherently relates P_i to Q (i.e., a sequence of coherence relations leading from P_i to Q), and
2. U does not directly express the speaker's expectation E using such expressions as 'I've expected ...'.

Note that the notion of allusion subsumes mention as a special case: U mentions E when Q and P_i are identical, as in the case of (1a).

For example, the ironic utterance (1b) in Situation 1 alludes to the speaker's expectation, as the action of keeping rooms clean *volitionally causes* the expected state that the room is clean. Similarly, (1c) alludes to the expectation by referring to the state (i.e., the room is messy), which *motivates* the action (of cleaning up the room) *volitionally causing* the expected state. The following ironic utterances also show various ways of allusion.

[Situation 5] Candy had baked a pizza to satisfy her hunger. When she was dishing it up, her husband entered the kitchen and gobbled up the whole pizza. Candy said to her husband:

(6) a. I'm not hungry at all.
 b. I'm really happy to eat the pizza.
 c. Have you seen my pizza on the table?
 d. I don't want to eat any more.
 e. How about another small slice of pizza?

The allusion to the speaker Candy's expectation of satisfying her hunger is accomplished as follows:

Q = [Candy is not hungry] (speaker's expectation)
A = [Candy eats a pizza] (action that volitionally causes Q, i.e., *volitional-cause*(A, Q))
B = [Candy's husband eats the whole pizza] (action that prevents A, i.e., *prevent*(B, A))
Y = [Candy does not want to eat any more] (state non-volitionally caused by Q, i.e., *non-volitional-cause*(Q, Y))
X = [Candy's pizza is on the table] (state that enables A, i.e., *enable*(X, A))
In (6a) P and Q are identical.
In (6b) *volitional-cause*(P_i, Q) where P_i ('to eat the pizza') and A are identical.
In (6c) *enable*(P_i, A) $\wedge$ *volitional-cause*(A, Q) where P_i and X are identical.[6]
In (6d) *non-volitional-cause*(Q, P) where P and Y are identical.
In (6e) *prevent*(P_i, A) $\wedge$ *volitional-cause*(A, Q) where P_i and B are identical.

3.2.2. Pragmatic insincerity

Pragmatic insincerity is an extension of the concept of surface incongruity as caused by a violation of norms. An ironic utterance is pragmatically insincere when it violates at least one of the pragmatic principles. Many ironic utterances like (1a) intentionally violate one of the preconditions (such as the sincerity, preparatory, and propositional content conditions) that need to hold before their illocutionary speech acts are accomplished; but even ironic utterances that do not violate these preconditions often violate other pragmatic principles.

For example, understatements like (1c) are pragmatically insincere since they do not provide as much information as required and thus violate the maxim of quantity.[7] Requests often become insincere when they are over-polite such as the following ironic statement (1f) uttered in Situation 1 (Kumon-Nakamura et al., 1995).

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[6] When the propositional content includes variables (e.g., the contents of WH-questions), 'being identical' can be replaced by 'being unifiable'. That P_i and X are unifiable means that they become identical when we simultaneously replace each occurrence of the variable in P_i and X by the same constant.

[7] Some understatements such as (1c) can also be analyzed as violations of the maxim of quality or truthfulness. However, which of Grice's maxims is violated is not important here.

(1) f. Would you mind if I asked you to clean up your room, please?

This utterance violates the politeness principle or, more precisely, the convention in linguistic politeness that any utterance should be made at an appropriate level of politeness. According to Brown and Levinson's (1987) model, the mother of Situation 1 does not have to make an indirect request (in accordance with the politeness strategy 'do the act on-record with negative politeness redress') because the mother and her son are intimate and he has no power over her. Nevertheless, she makes the indirect request by saying (1f); consequently, (1f) includes pragmatic insincerity. Some kinds of true assertion like (1b) might also be seen as pragmatically insincere (Haverkate, 1990), although to a much lesser degree than do other insincere utterances. Such assertions are generalized statements that attribute properties to certain sets of objects, but when the properties cannot be attributed to any objects in the discourse situation, their explicit contents are not relevant as they stand (e.g., the son in Situation 1 does not belong to the class of children expressed by the generalized statement 1b).

3.2.3. Indirect expression of negative attitudes

Speakers of irony use a variety of cues, many of which are called 'ironic cues', for indirectly expressing their negative attitudes (see Table 1). These cues include hyperbolic words/phrases and intensives (Kreuz and Roberts, 1995) (e.g., 'totally' in 1a and 'really' in 6b), interjections (e.g., 'Oh' in 3a), prosodic features (e.g., intonation, tone of voice, exaggerated stress and nasalization) and nonverbal cues (e.g., facial expressions and behavioral cues). Implicit display can also be accomplished by certain speech acts like 'thank' as in the case of (3b) (i.e., the verbal cue 4 of Table 1). Such utterances can be seen as implying a negative attitude by explicitly expressing the counterfactual, pleased emotion that speakers would experience if their failed expectation was satisfied.

Table 1
Examples of cues for implicitly displaying negative attitudes

Verbal cues	1. hyperbole, exaggeration – adjectives (e.g., amazing, splendid), adverbs (e.g., certainly, really, absolutely), metaphors
	2. interjection – 'Oh!', 'ah!', 'O!', 'Dear me!', 'Oh dear!', 'huh'
	3. prosody(paralinguistic cues) – accent, intonation contour, exaggerated stress, slow speaking rate, tone of voice, nasalization
	4. speech acts for expressing counterfactual pleased emotions – thank, compliment
Nonverbal cues	1. facial expression – quizzical, sneering, deadpan
	2. behavioral cues – gesture, pointing, laughing

3.3. Prototype-based view and the degree of ironicalness

Typical ironies can be recognized as satisfying all the three conditions for implicit display. For example, both (1a) and (1c) satisfy the three conditions (although 1c should be accompanied by prosodic and/or nonverbal cues).

However, many ironic utterances in genuine communicative interactions are not so straightforward. It is difficult or impossible to recognize all the conditions. For example, the ironic utterance (1b) is not so pragmatically insincere as is (1a) (or people do not recognize it as easily to be insincere). More important is the fact that hearers, because they are not sure whether the situation is surrounded by an ironic environment before interpreting an utterance, cannot recognize some of the properties of implicit display. In Situation 2, for example, the addressee Peter is incapable of identifying the incongruity between Brenda's expectation and the events of her morning before interpreting the utterance (2). Nevertheless, Peter can appreciate her ironic remark in some cases. The following example serves to further elucidate the point.

[Situation 6] (To someone acting inappropriately for their age)
(7) How old did you say you were?
(Kumon-Nakamura et al., 1995)

In this case, it is unlikely that the addressee of (7) knows the speaker's expectation beforehand. Rather, after recognizing the ironic intention involved in (7), the addressee becomes aware of the speaker's expectation – e.g., the speaker expects the addressee to conform to some social norm saying 'Be your age' – together with her/his inappropriate behavior. These examples clearly show that people do not have to see all the three conditions for implicit display in order to interpret irony, nor do they have to notice ironic environment beforehand, as long as there is a possibility that the situation is surrounded by ironic environment.

A close parallel can be drawn between the difficulty in distinguishing irony from nonirony and the difficulty in distinguishing members of a category from non-members. In the classical theory of categorization, it is assumed that a category is defined by common properties that all members of that category share. However, in accordance with current lines of thought in psychology and cognitive linguistics (e.g., Lakoff, 1987; Taylor, 1989), this view cannot explain our categorization ability. Similarly, the ironic examples (2) and (7) indicate that people do not decide whether an utterance is ironic by identifying all the conditions for implicit display.

I conclude that developing a method for assessing the similarity between an ironic utterance and a prototype of irony is a much more appropriate strategy for distinguishing irony from nonirony than defining irony by common properties shared by all ironic utterances which the previous irony studies have attempted to find. Along the lines suggested by Wittgenstein (1953), Rosch (1973) and Rosch and Mervis (1975), the notion of implicit display provides typicality conditions – e.g., allusion, pragmatic insincerity, indirect expression of negative attitude – characterizing the prototype of irony, and consequently, utterances with more typicality conditions are recognized to be more ironic, which is intuitively plausible.

To formulate a measure of similarity between each utterance and the prototype, I consider the following three values, which correspond to the three conditions of implicit display.

d_a: the degree of allusion of an utterance U – to what degree U is coherently related to the speaker's expectation E.

d_i: the degree of pragmatic insincerity of U – to what degree U violates pragmatic principles.

d_e: the degree of indirect expression of negative attitude of U – how many cues (e.g., such as listed in Table 1) accompany U.

In this paper, I assume that each of these values can be measured on a scale of 0 to 1, because these three properties of implicit display are achieved to different degrees.[8] Concerning the degree of allusion d_a, it can be assumed that d_a takes a greater value for an utterance whose P_i is related to Q by the smaller number of coherence relations. Thus, an utterance has the maximum value (i.e., $d_a = 1$) when it mentions the speaker's expectation (i.e., $P_i = Q$), and $d_a = 0$ when it does not allude to the expectation. For example, d_a of the utterance (1a) is greater than that of (1c) because (1a) mentions the expectation, whereas (1c) is connected to the expectation by two coherence relations. The degree of insincerity d_i can be determined according to the seriousness of violation or ease of recognition of the violation: $d_i = 0$ when an utterance does not include any violation, and otherwise $d_i > 0$. Also, d_e takes a greater value when an utterance includes more cues listed in Table 1, but $d_e = 0$ when it includes none of these. It must be noted that I am interested in the values of these factors that a hearer (i.e., a person who interprets an utterance) assesses before judging whether the utterance is ironic. The hearer's evaluation of these values often differs from that of the speaker who intends irony. Hence, for example, $d_a = 0$ and $d_i = 0$ are here intended to mean that the hearer can find no allusion to the expectation and no pragmatic insincerity, respectively.[9]

Using these factors, the similarity between an utterance U and the prototype is roughly calculated as the degree of ironicalness $d(U)$ by the following formula:

(8) $d(U) = d_a + d_i + d_e$

The formula reflects the prototype-based view that an utterance satisfying more conditions for implicit display is recognized as being more ironic.

Although the formula (8) seems to work well, I must in fact consider other factors and a more complex composition of these factors so that the degree of ironicalness is consistent with an important feature of irony: its asymmetry. As many studies (e.g., Kreuz and Glucksberg, 1989; Kumon-Nakamura et al., 1995) have pointed out,

[8] The numerical values ranging from 0 to 1 are here intended only as a model of relative measures of proportions of these factors. Therefore, I do not intend to claim that these values should be measured on a scale of 0 to 1, nor do I intend to claim that such scale is psychologically plausible. The point I want to clarify here is that the three properties of implicit display are of different degrees of achievement and thus should be quantitatively measured. A similar view is taken by Sperber and Wilson (1981: 309) about the echoic nature of irony: "there are echoic mentions of many different degrees and types".

[9] How these values should be determined for real examples is a complicated problem. One possible solution would be that they are empirically determined through a statistical method for training on naturally occurring examples or for human ratings used in the field of natural language processing.

positive utterances (e.g., "this room is clean") are, in general, recognized to be more ironic than negative utterances (e.g., "this room is messy"). This suggests that the polarity of an utterance plays an important role in assessing the degree of ironicalness. Furthermore, Kreuz and Glucksberg (1989) showed that negative utterances were also perceived appropriately as ironic when the speaker's negative expectation, which was incongruous with a positive event, was obvious to the hearer. For example, people generally expect that New York subways are dirty, so if one encounters a clean train, the negative remark "New York subways are dirty" communicates irony. This finding implies that the obviousness or the manifestness of the expectation also affects the way in which ironic utterances are interpreted: when an expectation is obvious to the hearer, an utterance which alludes to that expectation can be recognized to be ironic regardless of the polarity.

Hence, in order to incorporate the above findings on the asymmetry of irony into the formula for the degree of ironicalness, I will consider the following two factors:

d_d: the degree of context-independent desirability (i.e., polarity) of an utterance U – how positive the content of U is.
d_m: the degree of manifestness of the speaker's expectation E – to what degree the speaker's expectation which can constitute ironic environment is manifest to the hearer before interpreting U.

These degrees are also assumed to be measured on a scale of 0 to 1, for the same reason as mentioned above. The degree of desirability d_d takes a positive value (i.e., $1 \geq d_d > 0$) when the content of an utterance is positive, and $d_d = 0$ when it is not positive. The degree of manifestness takes a positive value (i.e., $1 \geq d_m > 0$) when the speaker's expectation is already manifest to the addressee (i.e., he/she knows the expectation), and $d_m = 0$ when it is not manifest at all to the addressee before interpreting an utterance (i.e., he/she does not know the expectation).[10] Presence or absence of allusion is closely related to manifestness of the expectation. If an allusion is recognized by the addressee (i.e., $d_a > 0$), it follows that the alluded expectation, which can motivate irony, is more or less manifest to the addressee, and thus $d_m > 0$.[11] On the other hand, the fact that no allusion can be recognized (i.e., $d_a = 0$) entails that there is no manifest expectation which can constitute ironic environment, and thus $d_m = 0$.[12]

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[10] Manifestness of the expectation is also a matter of degree, although it is much more difficult to determine such values. For example, expectations the speaker previously has mentioned to the addressee – i.e., when mutual knowledge about the expectations is established by linguistic co-presence, in Clark and Marshall's (1981) terms – would be more manifest than expectations the speaker did not mention (but the addressee knows).

[11] It does not follow that $d_a = d_m$, since allusion is a property of an utterance (i.e., relevance of an utterance to the expectation), while manifestness is a property of an expectation (i.e., addressee's ease of access to the expectation). Therefore, though closely related, these two factors should be separately considered.

[12] There are two cases in which no allusion can be found. One case is when the addressee does not know any speaker's expectations beforehand; the other case is when the addressee knows some

Table 2
The five factors determining the degree of ironicalness

d_a	the *D*egree of *A*llusion of an utterance to the speaker's expectation
d_i	the *D*egree of pragmatic *I*nsincerity involved in an utterance
d_e	the *D*egree of indirect *E*xpression of the negative attitude of an utterance
d_d	the *D*egree of context-independent *D*esirability (or polarity) of an utterance
d_m	the *D*egree of *M*anifestness of the speaker's expectation which motivates irony ($d_a = 0$ is equivalent to $d_m = 0$, but $d_a \neq d_m$ when $d_a, d_m > 0$.)

Using the five factors listed in Table 2, the degree of ironicalness $d(U)$ can be redefined, as expressed by the following formula:

(9) $d(U) = d_m \cdot d_a + (1-d_m) \cdot d_d + d_i + d_e$

This formula reflects the asymmetry of irony.[13] Other things (i.e., d_m, d_a, d_i, d_e) being equal, positive utterances are more ironic than negative utterances. At the same time, when the expectation is fully obvious to the hearer (i.e., $d_m = 1$), formula (9) is identical to formula (8); this is consistent with Kreuz and Glucksberg's (1989) finding that utterances alluding to an explicit expectation can be recognized ironically regardless of their polarity. On the other hand, when $d_m = 0$, formula (9) becomes:

(10) $d(U) = d_d + d_i + d_e$

Formula (10) means that when the speaker's expectation is not manifest at all before an utterance, the polarity of the utterance greatly affects the degree of ironicalness. Note that it does not mean that irony can be communicated even when there is no speaker's expectation. It merely says that people do not have to know the expectation beforehand in order to understand irony; in such cases, the utterance must include an allusion so that the expectation must be inferred from the utterance, and consequently, positive utterances can facilitate this inference process, as I will explain in the next section.

3.4. Distinguishing irony from nonirony

According to the implicit display theory, irony is distinguished from nonirony in accordance with the two conditions mentioned earlier:

1. The implicit display condition – irony implicitly displays an ironic environment.
2. The ironic environment condition – irony is given in the situation surrounded by the ironic environment.

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speaker's expectations, but judges that none of the known expectations are alluded to by an utterance. In both cases, the speaker's expectation which can trigger irony is not known beforehand, and thus $d_m = 0$.

13 How formula (9) is consistent with the asymmetry of irony will be elaborated on in section 5.2.

When a hearer cannot recognize that an utterance meets both conditions, he/she judges that it is nonironic.

The implicit display condition is checked on the basis of the prototype-based view of irony: implicit display of an utterance U is achieved to the extent that its degree of ironicalness $d(U)$ is high. Given a certain threshold value C (for example, a middle value $C = 1.5$), it is reasonably assumed that an utterance does not implicitly display ironic environment (and thus is not ironic) when its ironicalness value is less than C. For example, the utterance (1a) satisfies the implicit display condition: it mentions the speaker's expectation, which is manifest to the addressee (i.e., $d_a = 1$, $d_m = 1$), it is an obviously insincere statement (i.e., $d_i >> 0$; >> means 'much greater than'), it includes a hyperbolic word (i.e., $d_e >> 0$), and thereby, $d(U)$ is estimated at a higher value than C by (9). At the same time, when an utterance directly expresses ironic environment, as in the cases of (1d) and (1e) in section 3.2, it is judged not to achieve implicit display, and thus, to be nonironic.

When the implicit display condition is satisfied, the ironic environment condition is then checked, using the information about how the utterance achieves implicit display. The reason for checking the implicit display condition in advance of the ironic environment condition is that hearers cannot decide whether the known expectation motivates irony (i.e., whether it is a constituent of the ironic environment) unless they know whether the utterance alludes to that expectation. When hearers readily recognize an allusion to the speaker's expectation, they only examine whether the known expectation constitutes an ironic environment. Then, if the hearers can recognize or presuppose both the incongruity of the known expectation and the negative attitude, they simultaneously judge the utterance as ironic. On the other hand, if the hearers perceive that the expectation cannot constitute an ironic environment (e.g., the expectation is fulfilled in the situation, as in the case of Situation 4 in section 3.1), they judge the utterance as being nonironic.

In case the hearers do not know the speaker's expectation beforehand or they cannot find any allusion to the known expectation (i.e., d_m is 0 or very small), the ironic environment must be inferred from the information about how the utterance achieves implicit display by a process of hypothesis formation and evaluation.[14] In the inference process, an assumption about the speaker's expectation is derived from the content of the utterance and checked for whether it is attributable to the speaker and relevant to the situation (the expectation condition), whether it is incompatible to the situation (the incongruity condition), and whether a negative attitude can be elicited (the negative attitude condition). If the hearers recognize through the inference process that there is a reason to suppose that the discourse situation is surrounded by ironic environment, they judge the utterance as ironic and end up sharing the ironic environment with the speaker. On the other hand, when the hearers fail to infer the speaker's

[14] Some inferences are also required when the hearers recognize an allusion to the known expectation, but are not sure of the incongruity and/or the negative attitude. However, such an inference process differs from the process of inferring the expectation here. The former process only tests whether the known expectation constitutes an ironic environment, but the latter process needs a generate-and-test procedure to infer the expectation.

expectation (which constitutes an ironic environment), they judge the utterance as being nonironic even though they recognize that the implicit display is achieved.

For example, the addressee Peter perceives Brenda's utterance (2) in Situation 2 (where $d_m = 0$) as ironic if he can recognize that the two conditions are met. Indeed, utterance (2) satisfies the implicit display condition: it has high values of d_d (a positive statement) and d_e (especially when it is accompanied by prosodic cues), and thus $d(U)$ is estimated at a higher value than C by (9). Therefore, when Peter (and other hearers) can infer without contradiction that Brenda expected a good morning, but the morning was terrible and she felt unhappy, he interprets (2) ironically, and as a result, he ends up knowing that Situation 2 is surrounded by an ironic environment. On the other hand, the following utterance (1g) cannot be perceived as ironic when it is uttered by the mother in Situation 1.

(1) g. Hawaii is really beautiful!

This utterance meets the implicit display condition since it does not allude to the known expectation that the room is clean (i.e., $d_m = 0$) and thus it obtains high values for d_d, d_i, d_e. Nevertheless, the utterance is nonironic in accordance with the ironic environment condition: hearers cannot assume the speaker's expectation to be relevant to Situation 1 from the content of (1g) and thus cannot presuppose the ironic environment that makes (1g) ironic.

From the above discussion, I conclude that to interpret irony is to know that the discourse situation is surrounded by an ironic environment: irony communicates the information about the ironic environment to the addressees. In the case of typical irony, since the addressee already knows that the three conditions for ironic environment hold in the situation, interpretation of irony results in confirmation of the most uncertain information, that is, the speaker's negative attitude. That is why the previous irony theories argue that irony communicates the speaker's negative attitude. On the other hand, when the addressee does not recognize the ironic environment beforehand, he/she also obtains any new information that the unrecognized components hold in the current situation.

4. Superiority over the previous approaches to irony

4.1. Superiority over the violation-based approach

In section 2.1, I showed that violation of pragmatic principles is neither a necessary nor a sufficient property of irony, which is why the violation-based approach fails to distinguish irony from nonirony. Although pragmatic insincerity in this paper does not significantly differ from the violation of the maxim of quality or felicity conditions in the case of speech acts, the implicit display theory, in particular the prototype-based view, can solve the problems described in section 2.1.

First, the implicit display theory correctly accounts for ironic utterances which include no pragmatic insincerity or which hearers cannot recognize as including pragmatic insincerity, such as (1b) and (2). Although the degree of insincerity d_i is 0 for these utterances, their ironicalness values can be high enough to meet the implicit display condition when other factors (e.g., d_a, d_d, d_e) have high values (of course, at the same time, the ironic environment must be satisfied). Second, the implicit display theory distinguishes ironic utterances from nonironic ones, including those based on violation/insincerity: situations in which such nonironic utterances are given are not surrounded by any ironic environment, or the degrees of ironicalness of those utterances are assessed at relatively small values.Third, the implicit display theory does not assume that irony conveys the opposite of the literal meaning. Verbal irony implicitly conveys the information about the three events/states in the current situation surrounded by the ironic environment.

4.2. Allusion and echoic interpretation

In section 2.2, I showed, using the examples of nonechoic irony and nonironic echo, that Sperber and Wilson's (1986; Wilson and Sperber, 1992) echoic interpretation is neither a necessary nor a sufficient property of irony. In this section, I will show that my notion of allusion essentially differs from echoic interpretation, and consequently that the implicit display theory is successful in explaining nonechoic irony and nonironic echo.

The most important difference between allusion and echoic interpretation lies in what sources are allowed to be echoed/alluded to by irony, in particular, whether only the speaker's expectation is assumed to trigger irony. The echoic interpretation theory argues that irony echoes not only the speaker's expectation but also other sources such as other person's utterances, opinions, or even general norms. However, because of this argument the theory cannot provide a consistent explanation for a variety of ironic utterances such as (3a) and (3b), as described in section 2.2.

[Situation 3] Jesse said 'I'd be promoted before you' to his colleague Peter. This elicited the following reply:

(3) a. Oh! You'd be promoted before me.
b. Thank you for informing me of your priceless opinion.

Furthermore, in the following exchange between Peter and his other colleague, James, who does not know what Jesse had said,

(3) c. James: What did Jesse said to you?
d. Peter (with ridiculing aversion): He'd be promoted before me.

Peter's utterance (3d) echoes Jesse's preceding utterance and Peter simultaneously dissociates himself from Jesse's opinion, echoed in the same way as (3a), but no irony results. Hence, the sources which the echoic interpretation theory assumes irony to echo are too general to exclude nonironic echoic utterances.

According to the implicit display theory, every ironic utterance alludes to the speaker's, not other persons', expectations. Therefore, in the cases of (3a) and (3b), the ironic intention is provoked by the speaker's expectation concerning Jesse's utterance or opinion, not by Jesse's utterance itself. The speaker's expectation in Situation 3 is something like that Jesse should know that his preceding utterance (and the opinion expressed) are false.[15] The reason that (3d) is not ironic is that the addressee James does not (or cannot) assume any irony-motivating expectation of the speaker relevant to the current exchange and thus it does not meet the ironic environment condition (and it may not meet the implicit display condition since he knows no manifest expectations, it is not a positive statement for James, and it does not include insincerity).[16] For the same reason, the echo (4b) in section 2.2 is not ironic.

Another point that differentiates allusion in the framework of the implicit display theory from Sperber and Wilson's echoic interpretation is what relations are allowed between an ironic utterance and an echoed/alluded source. As I mentioned in section 2.2, the relation between an echoic interpretation and its echoed source is characterized by a sharing of implications; however, some ironies such as (3b) cannot be analyzed as a sharing of implications. On the other hand, the implicit display theory argues that the relation between an ironic utterance and an alluded expectation is best analyzed by coherence relations. For example, the utterance (3b) is coherently related to the speaker's expectation, because it refers to Jesse's action of informing that Jesse would be promoted before Peter and that action precludes the speaker's expected state of affairs. Hence (3b) alludes to the speaker's expectation and as a result it is ironic.

4.3. Pretense and victims

In section 2.3, I explained that the pretense theory (including the joint pretense view) cannot distinguish irony from nonirony and thus fails to account for how people become victims of irony. Since I already have shown the superiority of the implicit display theory with respect to the irony–nonirony distinction, I will show in this section that the implicit display theory provides a plausible explanation for how irony creates its victims.

My explanation of the victims' predicament is quite simple: victims of irony are persons (or agents, in terms of artificial intelligence) who performed intentional actions because of which the ironist's expectation was not realized. Thus, victimless

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[15] Kaufer (1981) mentioned a similar view in his discussion of what assumptions about the context may ironize clearly false utterances like 'Columbus discovered America in 1900'. He argued that, in order to be perceived as irony, such utterance must be given in the contextual setting in which "the ironist knows the utterance is false (and thus rejects it), knows that the addressee does not know this, and (most importantly) also *believes that the latter should know it*" (Kaufer, 1981: 503; italics added). This argument also applies to utterances the speaker believes to be false, such as the echo (3a) of Jesse's preceding utterance. Especially the last assumption in Kaufer's argument, viz., that the ironist believes that the addressee should know that the utterance is false, obviously corresponds to the speaker's expectation of echoic irony as explained here.

[16] The echoic utterance (3d) is also an appropriate answer to James' question, which can be another reason that (3d) is not interpreted as ironic. This explanation of such nonironic echoes is given by Giora (1995) in terms of discourse well-formedness.

ironies such as 'What lovely weather!' in the rain have no victims because the ironist's expected states of affairs (i.e., the fine weather) accidentally failed without someone's intentional actions. Moreover, although pretense theory cannot explain that the mother's son is the victim of ironies in Situation 1, the implicit display theory assumes him to be the victim because his action of reading a comic book prevented him from cleaning up the room and as a result the mother's expectation of the room being clean was not fulfilled.

This view of irony victims has its merit in that it does not need to posit different explanations for different victims. All victims are explained in the same way: anybody who precludes the realization of the speaker's expectation becomes a potential victim. Imagine, for instance, the following situation:

[Situation 7] Against Judy's advice, Bill bought what a crooked art dealer told him was a true Picasso. Roger, claiming to be competent, vouched for the painting's authenticity. Other friends of Bill's were much impressed by the painting until a genuine expert at last showed it to be a fake. Judy then says to them:

(11) That was a truly beautiful Picasso!
(Sperber, 1984: 134)

In this case, Bill, Roger, and Bill's friends are the victims of the irony (11). Although Sperber (1984) stated that they are victims in different ways, on my view they are victims for one and the same reason: they all precluded the realization of Judy's expectation. For example, Bill's action of buying the fake painting precluded Judy's expectation that Bill should not buy it, and thus he is a victim. Furthermore, on account of the speaker's expectation about the addressee's thought or utterance (as in the case of Situation 3), the addressee becomes a victim in that his/her action of expressing or informing his/her own thought or opinion can be seen as precluding the expectation. Therefore, Roger and Bill's friends are also victims. Roger vouched for the authenticity, which simultaneously precluded Judy's expectation that Roger should know his incompetence. In the same way, Bill's friends canceled Judy's expectation that they should know their opinion is false.

4.4. Understanding irony with and without ironic cues

Some studies (e.g., Cutler, 1974; Clark and Gerrig, 1984) assume that irony can be recognized by ironic cues, in particular, ironic tone of voice or ironic intonation. There is little doubt that these cues often accompany ironic utterances, but these cues are neither sufficient nor necessary properties of irony. Empirical studies have demonstrated that

- people can interpret ironic statements without any special intonational cues, since irony is perceived in written discourse (Gibbs and O'Brien, 1991);
- these cues can also be used for nonironic purposes (Barbe, 1995): both ironic and nonironic interpretations are derived from the use of the same intonational contour in different contexts (Ward and Hirschberg, 1985).

The implicit display theory is consistent with these findings. An utterance without ironic cues (i.e., $d_e = 0$) is ironic when values of other factors (e.g., d_a, d_d, d_i) are high enough for its ironicalness value to meet the implicit display condition (and when the discourse context meets the ironic environment condition). On the other hand, an utterance accompanied by these cues (i.e., with a high d_e value) is nonironic when the values of the other factors are so low that the utterance does not satisfy the implicit display condition, or when the discourse context does not meet the ironic environment condition.

5. Psychological validity of the implicit display theory

The implicit display theory makes the following predictions about irony rating and about the comprehension time of irony.

1. More prototypical ironies (i.e., ironies with greater degrees of ironicalness) are perceived as more ironic and are processed faster.
2. Ironies given in a situation that is more easily identified as ironic environment are processed faster (e.g., ironies in the contexts where the speaker's expectation is manifest to the addressees are processed faster than ironies in the contexts where the expectation is not known beforehand or less manifest).

The first prediction indicates that ironic utterances vary greatly as to their rating and comprehension time. Concerning irony rating, each property of implicit display has been examined separately in a number of psychological experiments, although there are no experimental studies which directly examine the interaction of the five factors with respect to the degree of ironicalness. For instance, Kumon-Nakamura et al. (1995) demonstrated that allusion and pragmatic insincerity differentiate ironic utterances from literal ones, and Kreuz and Roberts (1995) revealed that hyperbole facilitates the perception of irony. These results can be seen as empirical support for my first prediction about irony rating. On the other hand, there are no on-line studies which examine the first prediction about comprehension time. The second prediction suggests that context can greatly affect the processing time of ironies. Some experimental studies (e.g., Jorgensen et al., 1984; Gibbs, 1986) which attempted to show the effect of echoic mention can be seen as examining this prediction.

The rest of this section and section 6 show how the predictions of the implicit display theory are consistent with the existing psychological findings on irony.

5.1. Allusion and expectation

Gibbs (1986) conducted an experiment (Experiment 2 of six), which assessed comprehension times (and reaction times for making the paraphrase judgments) for ironic utterances in explicit and implicit contexts. Each explicit context contained the statements motivating an explicit echoic mention of some belief or expectation, whereas the implicit contexts contained no such statements. Examples of the story contexts and the target sentences presented in Gibbs (1986) are as follows:

[Explicit context (Situation 8)]: Explicit context Gus just graduated from high school and he didn't know what to do. One day he saw an ad about the Navy. It said that the Navy was not just a job, but an adventure. So, Gus joined up. Soon he was aboard a ship doing all sorts of boring things. One day as he was peeling potatoes he said to his buddy:

(12) 'This sure is an exciting life'.

[Implicit context (Situation 9)] Gus just graduated from high school and he didn't know what to do. So, Gus went out and joined the Navy. Soon he was aboard a ship doing all sorts of boring things. One day as he was peeling potatoes he said to his buddy,

(13) "This sure is an exciting life".

The result was that subjects significantly took less time to understand ironic remarks (and to make paraphrase judgments) in the explicit contexts than they did to process the same remarks in the implicit contexts.

This finding can be explained by the implicit display theory (i.e., the second prediction mentioned above). In the explicit contexts, the speaker's expectations (e.g., in the above story, the speaker Gus expected an adventurous and exciting life in the Navy) are quite manifest to hearers (and the subjects of the experiment), but in the implicit contexts the speaker's expectations are much less manifest. In other words, it can be reasonably assumed that the degrees of manifestness d_m for the explicit contexts are much greater than those for the implicit contexts (possibly $d_m = 0$). Therefore, in the implicit contexts the subjects (and hearers) must identify the speaker's expectation through an additional inference process, while in the explicit contexts they recognize an allusion to the manifest expectation without difficulty, as I explained in section 3.4. As a result, the ironic remarks in the explicit contexts take less time to process than in the implicit contexts.

5.2. *Asymmetry of irony and expectation*

As I mentioned in section 3.3, the degree of ironicalness is designed to accord with the asymmetry of irony. In the present section, I will explain how the formulation of the degree of ironicalness and the implicit display theory are consistent with further psychological findings about the asymmetry of irony.

Kreuz and Glucksberg (1989) showed that the availability of a victim is more important for negative sarcastic remarks than for positive ones: when an explicit victim was available, appropriateness ratings of positive and negative sarcastic statements did not differ, while when there were no available victims, sentence polarity had a considerable effect (i.e., positive statements were rated as more appropriate than negative ones). Since (as they assumed) the availability of victims provides one measure of explicitness/manifestness of an expectation, such interaction between victim availability and sentence polarity can be seen as the interaction between d_m and d_d, such that in fact the degree of ironicalness predicts the interaction: the term$(1-d_m) \cdot d_d$ of the formula (9) indicates that, other things being equal, d_d has little effect on $d(U)$ when $d_m \approx 1$ (i.e., $1-d_m \approx 0$), but has a considerable effect when $d_m = 0$ (i.e., $1-d_m = 1$).

More importantly, Kumon-Nakamura et al. (1995) showed that counterfactual positive utterances were still recognized to be ironic even when the speaker's negative expectation was obvious to the addressees. This finding indicates that when a positive ironic utterance does not allude to the known negative expectation, an alternative (positive) expectation of the speaker is inferred so that the utterance includes an allusion. Furthermore, Gibbs (1986) showed that when there were no explicit expectations, counterfactual positive utterances were rated as more ironic and processed faster than counterfactual negative ones. Taken together, these results support the implicit display theory and the formula for the degree of ironicalness.When a hearer does not recognize that an utterance alludes to the speaker's expectation (i.e., $d_a = d_m = 0$), the degree of ironicalness is considerably affected by sentence polarity (as formula 9 indicates), where a positive utterance facilitates the inference process of the speaker's expectation.

6. Processing times for ironic and literal utterances

A number of studies have proposed comprehension models of figurative language which make different predictions about processing times for literal versus figurative utterances. For irony comprehension, Gibbs (1986) demonstrated that people did not take any longer to interpret ironic sentences than they did to interpret nonironic literal equivalent sentences. This result seems to imply that the traditional pragmatic view (or the so-called standard pragmatic model, e.g., Grice, 1975; Searle, 1979a) is incorrect, inasmuch as it predicts that ironic expressions would always take more time to process than literal language. On the other hand, Giora (1995) contended that a reanalysis of Gibbs's (1986) findings evinces that ironic utterances take longer to process than nonironic ones. The point of her reanalysis is that it is the processing times of the same sentence embedded in different (literally/ironically motivating) contexts which should be measured, while Gibbs (1986) arrives at his conclusion by comparing different (ironic/literal) sentences with the same implicated meaning in the same context. Moreover, Giora (1997) maintains that such reinterpreted findings are consistent with the so-called graded salience hypothesis, according to which salient meanings are processed first before less salient meanings are activated.

Although I agree with Giora's critique of the comparison method for measuring comprehension time differences and even though I accept her graded salience hypothesis, I do not agree with one point: viz., that irony always takes longer to process than nonironic literal language.[17] I believe that while sometimes ironic

[17] The graded salience hypothesis also predicts that conventional/familiar ironies do not take longer to process than equivalent literal sentences, because their ironic and literal meanings are equally salient (Giora, 1999). In the rest of this section, I argue against the claim that unconventional ironic utterances, whose ironic meanings are less salient, always take longer to process than nonironic literal expressions.

interpretation proceeds slower than literal interpretation, at other times an ironic interpretation does not take longer to process than its literal counterpart. I will therefore try to show that Gibbs's (1986) experimental results can be interpreted differently by means of Giora's (1995) comparison method, so that irony does not always take longer to process. In addition, I will explain that the predictions of the implicit display theory, as shown in section 5, suggest such a result.

In Gibbs's (1986) experiment (Experiment 1), four types of texts – sarcastic and nonsarcastic sentences in negative contexts and literal and compliment sentences in positive contexts – were used to measure comprehension times for ironic versus literal sentences. Here is a sample of the texts presented in (Gibbs, 1986):

[Negative context (Situation 10)]: Harry was building an addition to his house. He was working real hard putting in the foundation. His younger brother was supposed to help. But he never showed up. At the end of a long day, Harry's brother finally appeared. Harry was a bit upset with him. Harry said to his brother:

(14) a. [Sarcastic target] You're a big help.
b. [Nonsarcastic target] You're not helping me.

[Positive context (Situation 11)]: Greg was having trouble with calculus. He had a big exam coming up and he was in trouble. Fortunately, his roommate tutored him on some of the basics. When they were done, Greg felt he'd learned a lot. "Well", he said to his roommate,

(15) a. [Literal target] You're a big help.
b. [Compliment target] Thanks for your help.

If Giora's argument for the time-course of irony comprehension is right, the sarcastic (ironic) utterances (e.g., 14a) should take longer than the nonironic literal uses of the same sentences (e.g., 15a). However, the result does not support this prediction: the differences in comprehension times were not significant (Gibbs, 1986: 6). Giora (1995) explains the result of the equal comprehension times in terms of discourse well-formedness. For instance, the sarcastic utterance (14a) is highly informative in Situation 10; in contrast, the literal utterance (15a) in Situation 11 states the obvious. Hence, the longer reading times for the sarcastic utterances predicted by the graded salience hypothesis are offset by the relative well-formedness of the sarcastic utterances as compared to the literal uses of the same sentences. Giora (1995) therefore claims that the sarcastic utterances (e.g., 14a) should be compared with the literal compliment utterances (e.g., 15b) because, for example, both (14a) and (15b) are equally informative (i.e., they are thanking ironically/literally); also, Gibbs's result indeed shows that the sarcastic utterances took significantly longer to comprehend than the compliment ones. However, such a comparison does not justify Giora's claim as to the time-course of ironic and literal comprehension: there is a possibility that ironic uses of the compliment sentences (e.g., saying 'Thanks for your help' ironically) would not take longer to process than literal uses of the same sentences (e.g., 15b).

The observed equal reading times for the sarcastic sentences and the literal uses of the same sentences can be explained by the implicit display theory. Sarcastic sentences like (14a) are highly prototypical ironies (i.e., they can be readily recognized as satisfying all the conditions for implicit display) and the negative contexts like Situation 10 are easily identified as ironic environments (i.e., all the components of the ironic environment are manifest to the subjects). Therefore, comprehension of these ironies does not need an additional inference process, and for this reason, there would be little time difference between the sarcastic utterances and the literal appropriate utterances like (15a).

On the other hand, another of Gibbs's (1986) experiments (Experiment 3), in which the following texts were used, demonstrated that the sarcastic utterance of both sentence types took longer to process than the nonsarcastic use of the same sentences.

[Normative (negative) context (Situation 12)]: Billy and Joe were long-time pals. But one time when Billy was away on a business trip, Joe slept with Billy's wife, Lynn. When Billy found out about it afterwards, he was upset. He confronted Joe and said to him:

(16) a. [Sarcastic target] You're a fine friend.
b. [Nonsarcastic target] You're a terrible friend.

[Non-normative (positive) context (Situation 13)]: Billy and Joe were long-time pals. One time Billy was in desperate need of money. His car had broken down and he needed $300 to fix it. So, he asked Joe for a loan. Joe said he could lend Billy the money. This made Billy happy and he said to Joe:

(17) a. [Sarcastic target] You're a terrible friend.
b. [Nonsarcastic target] You're a fine friend.

This result, too, can be explained by the implicit display theory. The stories used in the experiment are constructed so that there are no explicit expectations (Gibbs, 1986), and thus, ironic interpretation in both types of context needs the additional process of inferring the speaker's expectation. Taken together with the observation referred to above that there is no significant time difference between ironic and literal utterances, when the speaker's expectation is manifest, the second prediction in section 5 implies that ironic utterances without manifest expectations take longer to process than literal utterances.

Giora's (1997, 1999) graded salience hypothesis is a general principle that governs literal and figurative language comprehension. According to the graded salience hypothesis, the most salient meaning is processed first, and if it is rejected as the intended meaning, a less salient meaning is then processed. Thus, this view assumes no priority with respect to literality, and I agree with the graded salience hypothesis in this respect. Concerning irony comprehension, Giora states that the ironic meaning of unconventional irony is less salient than its literal meaning: "Even if irony were a widespread practice, ironic meanings have not for the most part been conventionalized, i.e., made salient (though context may contribute to their salience)"

(Giora, 1997: 192–193). The graded salience hypothesis, she argues, then predicts that (unconventional) ironic utterances always take more time to process than the same utterances used literally. Giora et al. (1998) showed findings in favor of this prediction: ironic utterances (e.g., 'You are just in time' when a student is late for the lecture) took longer to read than the same utterances used literally (Experiment 1), while the literal meanings of the ironic utterances were activated first and were not suppressed even when the ironic meanings were activated (Experiments 2 and 3).

However, I do not agree with Giora's argument about the time difference between ironic and literal utterances being explained by the graded salience hypothesis, because Giora underestimates the important role of context in language comprehension. It is doubtful that the fact that the literal meaning of irony is activated first entails that the whole literal interpretation of a literal sentence is processed faster than the whole ironic interpretation of the same sentence. The implicit display theory provides an alternative explanation of the time difference, one that is consistent with Giora et al.'s (1998) findings. According to the implicit display theory, the ironic interpretation of an ironic utterance requires the presence of the literal sentence meaning, because people must assess the degree of ironicalness and/or infer the speaker's expectation in order to interpret the irony (the view that irony requires computation of the literal meaning is also consistent with Giora's, 1995, indirect negation view of irony). Hence, after the literal meaning of irony is computed first, the ironic interpretation is derived from the information provided by the literal meaning and the contextual information.

As to literal interpretation, this is carried out along the same lines: literal interpretation is also inferentially derived from the immediately computed literal meaning and the contextual information (for a similar view of literal and nonliteral interpretation, see Récanati, 1995). Therefore, the processing time difference between the ironic and the literal interpretation can be attributed to the time difference in the process of discourse interpretation in which the speaker's meaning is derived from the sentence meaning and context. This view of literal and ironic comprehension is consistent with the second prediction of the implicit display theory presented in section 5. The longer comprehension times of irony shown by Giora et al. (1998) may then be explained as the result of the discourse contexts for irony being less easily identified as ironic environment; as the above discussion of Gibbs's findings shows, irony would be easily processed if it were given in a situation where the ironic environment is manifest to the hearers.

From these discussions, one important point becomes clear: there seem to be no principles common to all ironies that would decide on a priority of ironic over literal language with respect to ease of processing (this point must be justified by further empirical research). More prototypical ironies in the contexts in which the speaker's expectation is manifest would be processed faster than, or as fast as, literal language, and the less prototypical ironies in contexts in which the speaker's expectation is not manifest would be processed slower than literal language.

7. Conclusion

In order to provide a reliable explanation of how people distinguish ironic utterances from nonironic ones, this paper has proposed the implicit display theory of verbal irony. The essential points of the theory are:

1. Verbal irony presupposes a proper situational setting, which has been described in terms of ironic environment. An ironic environment consists of the speaker's expectation, an incongruity between expectation and reality, and the speaker's negative attitude toward this incongruity.
2. Verbal irony is a verbal expression (utterance or statement) that implicitly displays an ironic environment. This implicit display of the ironic environment is, in the most prototypical cases, achieved by an utterance which alludes to the speaker's expectation, violates one of the pragmatic principles, and is accompanied by indirect cues.
3. Verbal irony is distinguished from nonirony in accordance with both the ironic environment condition and the implicit display condition: in order for an utterance to be interpreted ironically, the utterance must be recognized as achieving implicit display through the process of assessing the degree of ironicalness, and the situation must be identified as an ironic environment through the process of checking or inferring the three components. The degree of ironicalness is quantitatively defined as a measure of similarity between the prototype of irony and an utterance; it embodies the prototype-based view of irony that the ironical character of an utterance is a matter of degree.

These points permit the implicit display theory to overcome the difficulties involved in previous irony theories, and to be much more comprehensive. The main problem with the previous studies is that they have attempted to provide necessary and/or sufficient properties for distinguishing irony from nonirony; however, there appear to be no such properties shared by all ironic utterances. On the other hand, the prototype-based view taken by the implicit display theory does not need such common properties. Rather, it takes the comparative view in which the property of irony, implicit display, is achieved to the extent that the degree of ironicalness is high. Furthermore, the implicit display theory argues that only the expectations possessed by speakers can motivate them to use language ironically. When the speaker has no expectation which is identifiable and relevant to the situation, his/her utterance is not perceived as ironic even if it echoes other persons' utterances, opinions, or general norms. Echoic irony should similarly be analyzed by an allusion to the speaker's expectation concerning someone's opinion or utterance. This view of echoed sources gives the implicit display theory an advantage over Sperber and Wilson's (1986; Wilson and Sperber, 1992) echoic interpretation theory, which has been the dominant view of irony.

The implicit display theory is consistent with several empirical findings. The ironic environment condition indicates the important role of context in interpreting irony. It predicts that ironies in a context where the speaker's expectation is known by hearers beforehand, are interpreted faster than ironies in contexts where such expectation is not available; the psychological findings about echoic mention support this prediction. On the other hand, the degree of ironicalness $d(U)$ explains the observed interaction between sentence polarity and expectation availability. Furthermore, the degree of ironicalness poses interesting questions for further empirical research. For example, formula (9) would predict that exceedingly positive statements in the context where no speaker's expectation is available (i.e., $d_m = 0$; $d_d = 1$) are judged to be more ironic than statements related to the fully manifest expectation by a number of coherence relations (i.e., $d_m = 1$; $d_a << 1$). The question is if this really is the case. This question notwithstanding, the implicit display theory would also hold promise as the basis for a psychologically testable theory of verbal irony.

Of course, I do not suppose that this paper gives a complete theory of verbal irony: the implicit display theory has its limitations. One crucial limitation is that the theory does not address the functions of irony, which is a recent topic to emerge in the empirical studies of irony (Roberts and Kreuz, 1994; Dews and Winner, 1995; Dews et al., 1995; Jorgensen, 1996; Ito and Takizawa, 1996). Irony offers an effective way of accomplishing various communication goals that are difficult to achieve literally: positive goals (e.g., to be humorous, to emphasize a point) and negative goals (e.g., to be sarcastic, to give pain, to criticize). One interesting question that arises here is how speaker's intended goals affect the decision on how to accomplish implicit display, i.e., which of the coherence relations should be used for allusion, which of the pragmatic principles should be violated, and what cues should be used to convey the attitude. To take a simple example, ironic utterances employed to achieve the goal of giving pain to an addressee or of being sarcastic seem to have some common properties – they refer to a victim's action (or one of its premises/effects), which precludes the speaker's expectation, they have a surface speech act of expressives like thanking, and they express the counterfactual pleased emotion toward the victim's action –, although this hypothesis has, as yet, no empirical support. It would be interesting to try and extend the implicit display theory so as to account for the functions of irony. In a related development, I am trying to develop a computational model of irony interpretation based on the implicit display theory in order to obtain further evidence in favor of the theory (Utsumi, 1996, 1999).

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